AMENDMENTS TO THE CLAIMS:

The following listing of claims should be entered to replace all prior listings of claims in the application. In accordance with Rule 121, the status of each claim is indicated parenthetically. As can be seen, in this listing, claims 2, 4-7, 12, 13-15, 18, 19, 21, 24, 27, 28, 30-32, 35, 36, 40, 44 and 47-49 have been amended. Claims 1-54 remain in the application.

LISTING OF CLAIMS:

1. (Original) A fiber optic cable for a wavelength division multiplexing (WDM) optical transmission system including a plurality of connected optical fibers, wherein each of the connected optical fibers is formed of a plurality of optical fibers respectively exhibiting different dispersion values and different dispersion slopes in a predetermined operating wavelength range while having different lengths and different effective areas, the optical fibers being connected to one another in an optional order.

2. (Currently Amended) The fiber optic cable according to claim 1, wherein the different dispersion values and different lengths of the optical fibers in each of the connected optical fibers are controlled so that the ~~corrected~~ connected optical fiber has an average dispersion value corresponding to a value required in the WDM optical transmission system.

3. (Original) The fiber optic cable according to claim 1, wherein the different dispersion values, different slopes, and different lengths of the optical fibers in each of the connected optical fibers are controlled so that the connected optical fiber has an average dispersion slope corresponding to a value required in the WDM optical transmission system.

4. (Currently amended) The fiber optic cable according to claim 1, wherein the different effective areas and ~~different'~~ different lengths of the optical fibers in each of the connected optical fibers are controlled so that the connected optical fiber has an average effective area corresponding to a value required in the WDM optical transmission system.

5. (Currently amended) The fiber optic cable according to claim 1, wherein at least a part of the different dispersion values are +2 ~~ps/nm-ln~~ ps/nm-km or more, and at least the other part of the different dispersion values are -2 ps/nm-km or less.

6. (Currently amended) The fiber optic cable according to claim 5, wherein the optical fibers of each of the connected optical fibers are connected to one another in such a fashion that adjacent ones of the optical fibers have dispersion values of opposite signs, respectively, while exhibiting a dispersion value difference of at least 10 ps/nm-km ~~therebetween~~ there between.

7. (Currently amended) The fiber optic cable according to ~~claims~~ claim 1, wherein each of the connected optical fibers has a length of ~~0. 5 to 20 km.~~ 0.5 to 20 km.

8. (Original) A fiber optic cable for a wavelength division multiplexing (WDM) optical transmission system including a plurality of connected optical fibers, wherein each of the connected optical fibers comprises: a first optical fiber exhibiting a first dispersion value and a first dispersion slope in a predetermined operating wavelength range while having a first length and a first effective area; and a second optical fiber exhibiting a second dispersion value and a second dispersion slope in the predetermined operating wavelength range while having a second length and a second effective area; the first and second optical fibers being connected together in an optional order.

9. (Original) The fiber optic cable according to claim 8, wherein the first dispersion value and first length of the first optical fiber and the second dispersion value and second length of the second optical fiber are controlled so that an associated one of the connected optical fibers has an average dispersion value corresponding to a value required in the WDM optical transmission system.

10. (Original) The fiber optic cable according to claim 8, wherein the first dispersion value, first dispersion slope, and first length of the first optical fiber and the second dispersion value, second dispersion slope, and second length of the second optical fiber are controlled so that an associated one of the connected optical fibers has a dispersion value corresponding to a value required in the WDM optical transmission system.

11. (Original) The fiber optic cable according to claim 8, wherein the first length and first effective area of the first optical fiber and the second length and second effective area of the second optical fiber are controlled so that an associated one of the connected optical fibers has an effective area corresponding to a value required in the WDM optical transmission system.

12. (Currently amended) The fiber optic cable according to claim 9, wherein the first dispersion value of the first optical fiber, the second dispersion value of the second optical fiber, and the average dispersion value of the associated connected optical fiber are function of an operating wavelength (λ), ~~and the.~~ and the average dispersion value of the connected optical fiber is determined by the following equation:

$$D_{cf}(\lambda) = \frac{D_1(\lambda)l_1 + D_2(\lambda)l_2}{l_1 + l_2}$$

In the equation,

"D_{cf}" represents the average dispersion value (ps/nm-km) of the connected optical fiber;

"'D_1" represents the first dispersion value (ps/nm-km) of the first optical fiber;

"D_2" represents the second dispersion value (ps/nm-km) of the first optical fiber;

~~"1_1" represents~~ "l_1" represents the first length (km) of the first optical fiber; and

~~"1_2" represents~~ "l_2" represents the second ~~length (lan)~~ length (km) of the second optical fiber.

13. (Currently amended) The fiber optic cable according to claim 10, wherein the first dispersion value and first dispersion slope of ~~the first.~~ the first optical fiber, the second dispersion value and second dispersion slope of the second optical fiber, and the dispersion value and dispersion slope of an associated one of the connected optical fibers are function of an operating wavelength (λ), and the dispersion value of the connected optical fiber is determined by the following equation:

$$S_{cf}(\lambda)=\frac{\partial D_{cf}(\lambda)}{\partial\lambda}=\frac{\frac{\partial D_1(\lambda)}{\partial\lambda}l_1+\frac{\partial D_2(\lambda)}{\partial\lambda}l_2}{l_1+l_2}=\frac{S_1(\lambda)l_1+S_2(\lambda)l_2}{l_1+l_2}$$

In the equation,

"S_{cf}" represents the dispersion slope ~~(ps/rm²-km)~~ (ps/nm^2-km) of the connected optical fiber;

"D_{cf}" represents the average dispersion value (ps/nm-km) of the connected optical fiber;

"D_1" represents the first dispersion value ~~(ps/nm-kn)~~ (ps/nm-km) of the first optical fiber;

"D_2" represents the second dispersion value (ps/nm-km) of the first optical fiber;

"S_1" represents the first dispersion slope ~~(ps/nm2-km))~~ (ps/nm^2-km) of the first optical fiber;

"S_2" represents the second dispersion slope (ps/nm^2-km) of the second optical fiber;

"l_1" represents the first length (km) of the first optical fiber; and

"l_2" represents the second length (km) of the second optical fiber.

14. (Currently amended) The fiber optic cable according to claim 11, wherein the effective area of the connected optical fiber ~~is f iber;~~ is fiber determined by the following equation:

$$A_{cf} = \frac{L_1 L_2 - 1}{\frac{\alpha_3}{\alpha_1}\frac{L_1 - 1}{A_1} + \frac{\alpha_3}{\alpha_2}\frac{L_1(L_2 - 1)}{A_2}}$$

In the equation,

"A_{cf}" represents the effective area (μm^2) of the connected optical fiber;

"l_1" represents the first length ~~optical~~ (km) optical fiber;

"l_2" represents the second length (km) of the second optical fiber;

"α_1" represents a loss index (/km) of the first optical fiber;

"α_2" represents a loss index (/km) of the second optical fiber;

"α_3" is expressed by "$\alpha_3 = \frac{\alpha_1 l_1 + \alpha_2 l_2}{l_1 + l_1}$";

"α_1" is expressed by "α_1 = 0.1 x a_1 x log(10)";

"α_2" is expressed by "α_1 = 0.1 x a_2 x log(10)";

"a_{1}" represents a loss coefficient (dB/km) of the first optical fiber;

~~"a_{1}" represents~~ "a_{2}" represents a loss coefficient (dB/km) of the second optical fiber;

"L1" is expressed by "$L_1 = \exp(-\alpha_1 l_1)$"; and

~~:L1" is expressed~~ "L2" is expressed by ~~"L2 = exp (-α212)";~~ "$L_2 = \exp(-\alpha_2 l_2)$".

15. (Currently amended) The fiber optic cable according to claim 8, wherein the first and second dispersion values have opposite signs, respectively, while exhibiting a difference of at least

10 ps/nm-km ~~therebetween~~ there between.

16. (Previously presented) The fiber optic cable according to claim 8, wherein the first dispersion slope has a positive value, and the second dispersion slope has a negative value.

17. (Previously presented) The fiber optic cable according to claim 8, wherein the first and second dispersion slopes have positive values, respectively.

18. (Currently amended) The fiber optic cable according to claim 8, wherein the first dispersion value of the first optical ~~f iber ranges~~ fiber ranges from +4 ps/nm-km to +20 ~~ps/nm-Km~~ ps/nm-km at a central wavelength in the operating wavelength range, and the second dispersion value of the second optical fiber ranges from -20 ~~ps/nm-kn~~ ps/nm-km to -4 ps/nm-km at the central wavelength in the operating wavelength range.

19. (Currently amended) The fiber optic cable according to claim 18, wherein the first dispersion value ranges from 15 ps/nm-km to 18 ~~ps/m-km~~ ps/nm-km, and the second dispersion value ranges from -12 ps/nm-km to -9 ~~ps/nm-kn~~ ps/nm-km.

20. (Previously presented) The fiber optic cable according to claim 8, wherein the first dispersion slope has a value of +0.1 ps/nm^2-km or less, and the second dispersion slope has a value of -0.1 ps/nm^2-km.

21. (Currently amended) The fiber optic cable according to ~~any one of claims 8 to 14~~ claim 8, wherein the first and second dispersion slopes have values ~~of +0. 1~~ ~~ps/rm2-km~~ of +0.1 ps/nm^2-km or less, respectively.

22. (Previously presented) The fiber optic cable according to claim 8, wherein the first effective area ranges from 50 μm^2 to 90 μm^2, and the second effective area ranges from 30 μm^2 to 80 μm^2.

23. (Original) The fiber optic cable according to claim 19, wherein the first and second lengths of the first and second optical fibers range from 3 km to 6 km, respectively.

24. (Currently amended) The fiber optic cable according to ~~claims~~ claim 8, wherein the first and second optical fibers exhibit a dispersion value of 0 in a wavelength range of 1, 300 to 1, 550 nm.

25. (Previously presented) The fiber optic cable according to claim 8, wherein the first optical fiber exhibits a dispersion value of 0 in a wavelength range of 1,300 to 1,500 nm, and the second optical fiber exhibits a dispersion value of 0 at a wavelength of 1,600 nm or more.

26. (Original) A fiber optic cable for a wavelength division multiplexing (WDM) optical transmission system including a plurality of connected optical fibers, wherein each of the connected optical fibers comprises:

a first optical fiber exhibiting a first dispersion value and a first dispersion slope in a predetermined operating wavelength range while having a first length and a first effective area;

a second optical fiber exhibiting a second dispersion value and a second dispersion slope at the predetermined operating wavelength range while having a second length and a second effective area; and

a third optical fiber exhibiting the first dispersion value and the first dispersion slope at the predetermined operating wavelength range while having a third length and the first effective area;

the first optical fiber, the second optical fiber, and the third optical fiber being connected to one another in this order.

27. (Currently amended) The fiber optic cable according to claim 26, wherein the first dispersion value and first length of the first optical fiber, the second dispersion value and second length of the second optical fiber, and the first dispersion value and third length of the third optical ~~fiber ar6~~ fiber are controlled so that an associated one of the connected optical fibers has an average dispersion value corresponding to a value required in the WDM optical transmission system.

28. (Currently amended) The fiber optic cable according to ~~claim 2 6~~ claim 26, wherein the first dispersion value, first dispersion slope, and first length of the first optical fiber, the second dispersion value, second dispersion slope, and second length of the second optical fiber, and the first dispersion value, first dispersion slope, and third length of the third optical fiber are controlled so that an associated one of the connected optical fibers has a dispersion value corresponding to a value required in the WDM optical transmission system.

29. (Original) The fiber optic cable according to claim 26, wherein the first length and first effective area of the first optical fiber, the second length and second effective area of the second optical fiber, and the third length and first effective area of the third optical fiber are controlled so that an associated one of the connected optical fibers has an effective area corresponding to a value required in the WDM optical transmission system.

30. (Currently amended) The fiber optic cable according to claim 27, wherein the first dispersion value of the first and third optical fibers, the second dispersion value of the second optical fiber, and the average dispersion value of the associated connected optical fiber are function of an operating wavelength (λ) and the average dispersion optical fiber is determined by value of the

following equation:

$$D_{cf}(\lambda)=\frac{D_1(\lambda)l_1+D_2(\lambda)l_2+D_1(\lambda)l_3}{l_1+l_2+l_3}.$$

In the equation,

"D_{cf}" represents the average dispersion value (ps/nm-km) of the connected optical fiber;

"D_1" represents the first dispersion value (ps/nm-km) of the first optical fiber;

"D_2" represents the second dispersion value (ps/nm-km) of the first optical fiber;

"l_1" represents the first ~~length (Jan)~~ length (km) of the first optical fiber;

"l_2" represents the second length (km) of the second optical fiber; and

"l_3" represents the third ~~length (Jan)~~ length (km) of the third optical fiber.

31. (Currently amended) The fiber optic cable according to claim 28, wherein the first dispersion value and first dispersion slope of the first and third optical fibers, the second dispersion value and second dispersion slope of the second optical fiber, and the average dispersion value and dispersion slope of an associated one of the connected optical fibers are function of an operating wavelength (λ), and the dispersion value of the connected optical fiber is determined by the following equation:

$$S_{cf}(\lambda)=\frac{\partial D_{cf}(\lambda)}{\partial\lambda}=\frac{\frac{\partial D_1(\lambda)}{\partial\lambda}l_1+\frac{\partial D_2(\lambda)}{\partial\lambda}(\lambda)l_2+\frac{\partial D_1(\lambda)}{\partial\lambda}l_3}{l_1+l_2+l_3}=\frac{S_1(\lambda)l_1+S_2(\lambda)l_2+S_1(\lambda)l_3}{l_1+l_2+l_3}$$

In the equation,

"S_{cf}" represents the dispersion slope (ps/nm^2-km) of the connected optical fiber;

~~D_{cf}" represents~~ "D_{cf}" represents the average dispersion value (ps/nm-km) of the connected optical fiber;

"D_1" represents ~~the first~~ the first dispersion value (ps/nm-km) of ~~the first~~ the first optical fiber;

"D_2" represents the second dispersion value ~~(ps/nm-kn)~~ (ps/nm-km) of ~~the first~~ the first optical fiber;

"l_1" represents ~~the first~~ the first length (km) of the first ~~optical fiber;~~ optical fiber;

"l_2" represents the second length (km) of the second ~~optical fiber.~~ optical fiber;

"l_3" represents the third length (km) of the third ~~optical fiber.~~ optical fiber;

"S_1" represents ~~the first~~ the first dispersion slope (ps/nm^2-km) of the first optical fiber; and

"S_2" represents the second dispersion slope (ps/nm^2-km) of the second optical fiber.

32. (Currently amended) The fiber optic cable according to claim 29, wherein the effective area of the connected optical fiber is determined by the following equation:

~~In the equation,~~

$$A_{cf} = \frac{L_1 L_2 L_3 - 1}{\frac{\alpha_3}{\alpha_1}\frac{(L_1 - L_1 L_2 + L_1 L_2 L_3 - 1)}{A_1} + \frac{\alpha_3}{\alpha_2}\frac{L_1(L_2 - 1)}{A_2}}$$

In the equation,

"A_{cf}" represents the effective connected area (μm2) of the connected optical fiber;

"l_1" represents the first length (km) of the first optical fiber;

"l_2" represents the second length (km) of the second optical fiber;

"l_3" represents the third length (km) of the third optical fiber;

"α_1" represents a loss index (/km) of the first optical fiber;

"α_2" represents a loss ~~index Oan)~~ index (/km) of the second optical fiber;

"α_3" is, ~~express ed~~ expressed by "$\alpha_3 = \frac{\alpha_1 l_1 + \alpha_2 l_2 + \alpha_1 l_3}{l_1 + l_1 + l_3}$ (/km)";

"α_1" is expressed by "$\alpha_1 = 0.1 \times a_1 \times \log (10)$";

"α_2" is expressed by ~~"$\alpha 2 = 0.1 \times a_1 \times \log (10)$";~~ "$\alpha_2 = 0.1 \times a_1 \times \log (10)$";

"a_{1}" represents a loss coefficient (dB/km) of the first optical fiber;

"a_{2}" represents a loss coefficient (dB/km) of the second optical fiber;

"L1" is expressed by ~~"$L_1 = \exp(-a_1 l_1)$";~~ "$L_1 = \exp(-\alpha_1 l_1)$";

"L2" is expressed by ~~"$L_2 = \exp(-a_2 l_2)$";~~ "$L_2 = \exp(-\alpha_2 l_2)$"; and

~~"L1" is expressed~~ "L3" is expressed by ~~"$L_3 = \exp(-a_3 l_3)$"~~ "$L_3 = \exp(-\alpha_3 l_3)$".

33. (Previously presented) The fiber optic cable according to claim 26, wherein the first and second dispersion values have opposite signs, respectively, while exhibiting a difference of at least 10 ps/nm-km there between.

34. (Previously presented) The fiber optic cable according to claim 26, wherein the first dispersion slope has a positive value, and the second dispersion slope has a negative value.

35. (Currently amended) The fiber optic cable according to ~~claims~~ claim 26, wherein the first and second dispersion slopes have positive values, respectively.

36. (Currently amended) The fiber optic cable according to ~~claims~~ claim 26, wherein the first dispersion value of the first optical fiber ranges from +4 ps/nm-km to +20 ps/nm-km at a central wavelength in the operating wavelength range, and the second dispersion value of the second optical fiber ranges from -20 ps/nm-km to -4 ps/nm-km at the central wavelength in the operating wavelength range.

37. (Original) The fiber optic cable according to claim 36, wherein the first dispersion value ranges from 15 ps/nm-km to 18 ps/nm-km, and the second dispersion value ranges from -12 ps/nm-km to -9 ps/nm-km.

38. (Previously presented) The fiber optic cable according to claim 26, wherein the first dispersion slope has a value of +0.1 ps/nm^2-km or less, and the second dispersion slope has a value of -0.1 ps/nm^2-km.

39. (Previously presented) The fiber optic cable according to claim 26, wherein the first and second dispersion slopes have values of +0.1 ps/nm^2-km or less, respectively.

40. (Currently amended) The fiber optic cable according to ~~claims~~ claim 26, wherein the first effective area ranges from 50 μm^2 to 90 μm^2, and the second effective area ranges from 30 μm^2 to 80 μm^2.

41. (Original) The fiber optic cable according to claim 37, wherein the first, second, and third lengths range from 3 km to 6 km, respectively.

42. (Previously presented) The fiber optic cable according to claim 26, wherein the first, second, and third optical fibers exhibit a dispersion value of 0 in a wavelength range of 1,300 to 1,500 nm.

43. (Previously presented) The fiber optic cable according to claim 26, wherein the first optical fiber exhibits a dispersion value of 0 in a wavelength range of 1,300 to 1,500 nm, and the second optical fiber exhibits a dispersion value of 0 at a wavelength of 1,600 nm or more.

44. (Currently amended) The fiber optic cable according to claim 1, wherein the connected optical fiber has an average dispersion value ranging from 1 ps/nm-km to ~~1O ps/nm-km~~ 10 ps/nm-km.

45. (Previously presented) The fiber optic cable according to claim 1, wherein the operating wavelength range is selected from the group consisting of a range from 1,300 nm to 1,530 nm, a range from 1,400 nm to 1,565 nm, and a range from 1,530 nm to 1,650 nm.

46. (Original) A wavelength division multiplexing (WDM) optical transmission system having a predetermined channel spacing and a predetermined number of channels, comprising:

a transmitting terminal for providing a plurality of optical signals respectively having different wavelengths;

a multiplexer connected to the transmitting terminal and adapted to multiplex the optical signals;

a plurality of fiber optic cables each including a plurality of connected optical fibers, each of the connected optical fibers being formed of a plurality of optical fibers respectively exhibiting different dispersion values and different dispersion slopes in a predetermined operating wavelength range while having different lengths and different effective areas, the optical fibers being connected to one another in an optional order;

connecting means for interconnecting the fiber optic cables;

optical amplifiers for amplifying the optical signal being transmitted through the fiber optic cables;

a demultiplexer for demultiplexing the optical signal transmitted through the fiber optic cables; and

a receiving terminal connected to the demultiplexer and adapted to receive the

demultiplexed optical signal.

47. (Currently amended) A wavelength division multiplexing (WDM) optical transmission system having a predetermined channel spacing and a predetermined number of channels, comprising:

a transmitting terminal for providing a plurality of optical signals respectively having different wavelengths;

a multiplexer connected to the transmitting terminal and adapted to multiplex the, optical signals;

a plurality of fiber optic cables each including a plurality of connected optical fibers, each of the connected optical fibers including a first optical fiber exhibiting a first dispersion value and a first dispersion slope in a predetermined operating wavelength range while having a first length and a first effective area, and a second optical fiber exhibiting a second dispersion value and a second dispersion slope in the predetermined operating wavelength range while having a second length and a second effective area, the first and second optical fibers being connected together in an ~~optional order.~~ optional order;

connecting means for interconnecting the fiber optic cables;

optical amplifiers for amplifying the optical signal being transmitted through the fiber optic cables;

a demultiplexer for demultiplexing the optical signal transmitted through the fiber optic cables; and

a receiving terminal connected to the demultiplexer and adapted to receive the demultiplexed optical signal.

48. (Currently amended) A wavelength division multiplexing (WDM) optical transmission system having a predetermined channel spacing and a predetermined number of channels, comprising:

a transmitting terminal for providing a plurality of optical signals respectively having different wavelengths; a multiplexer connected to the transmitting terminal and adapted to multiplex the optical signals;

a plurality of fiber optic cables each including a plurality of connected optical fibers, each of the connected optical fibers including a first optical fiber exhibiting a first dispersion value and a first dispersion slope in a predetermined operating wavelength range while having a first length and a first effective area, a second optical fiber exhibiting a second dispersion value and a second dispersion slope at the predetermined operating wavelength range while having a second length and a second effective area, a third first dispersion value and the predetermined operating wavelength range while having a third length and the first effective area, the first optical fiber, the second optical fiber, and the third optical fiber being connected to one another in ~~this order.~~ this order;

connecting means for interconnecting the fiber optic cables; optical amplifiers for amplifying the optical signal being transmitted through the fiber optic cables;

a demultiplexer for demultiplexing the optical signal transmitted through the fiber optic cables; and

a receiving terminal connected to the demultiplexer and adapted to receive the demultiplexed optical signal.

49. (Currently amended) The WDM optical transmission system according to ~~claims~~ claim 46, wherein the channel spacing is 50 GHz.

50. (Previously presented) The WDM optical transmission system according to claim 46, wherein the channel spacing is 100 GHz or more.

51. (Original) The WDM optical transmission system according to claim 47, wherein

the connecting means connects the first optical fiber of a selected one of the fiber optic cables to the first optical fiber of another one of the fiber optic cables adjacent to the first optical fiber of the selected fiber optic cable while controlling a length of the resultant connected first optical fiber.

52. (Original) The WDM optical transmission system according to claim 47, wherein the connecting means connects the first optical fiber of a selected one of the fiber optic cables to the second optical fiber of another one of the fiber optic cables adjacent to the first optical fiber of the selected fiber optic cable on an optical line.

53. (Original) The WDM optical transmission system according to claim 48, wherein the connecting means connects the first optical fiber of a selected one of the fiber optic cables to the first optical fiber of another one of the fiber optic cables adjacent to the first optical fiber of the selected fiber optic cable while generating a minimum connection loss.

54. (Original) The WDM optical transmission system according to claim 48, wherein the connecting means connects the third optical fiber of a selected one of the fiber optic cables to the first optical fiber of another one of the fiber optic cables adjacent to the third optical fiber of the selected fiber optic cable while generating a minimum connection loss.